CLAIMS:

1. A dual-stack optical data storage medium (10) for write-once recording using a focused radiation beam (9) having a wavelength λ and entering through an entrance face (8) of the medium (10) during recording, comprising:

- at least one substrate (1, 7) with present on a side thereof:
- a first recording stack (2) named L_0, comprising a write-once type L_0 recording layer (3) having a complex refractive index $\tilde{n}_{L0} = n_{L0} - i.k_{L0}$ and having a thickness d_{L0}, said first recording stack L_0 having an optical reflection value R_{L0} and an optical transmission value T_{L0},
- a second recording stack (5) named L_1 comprising a write-once type L_1 recording layer (6) having a complex refractive index $\tilde{n}_{L1} = n_{L1} - i.k_{L1}$ and having a thickness d_{L1}, said second recording stack L_1 having an optical reflection value R_{L1}, all parameters defined at the wavelength λ,

said first recording stack being present at a position closer to the entrance face than the second recording stack,

- a transparent spacer layer (4) sandwiched between the recording stacks (2, 5), said transparent spacer layer (4) having a thickness substantially larger than the depth of focus of the focused radiation beam (9),

characterized in that $0.45 \leq T_{L0} \leq 0.75$ and $0.40 \leq R_{L1} \leq 0.80$ and $k_{L0} < 0.3$ and $k_{L1} < 0.3$.

2. A dual-stack optical data storage medium as claimed in claim 1, wherein λ is approximately 655 nm.

3. A dual-stack optical data storage medium as claimed in claim 1 or 2, wherein for the write-once L_0 recording layer the following conditions are fulfilled $n_{L0} \geq 2.5$ and d_{L0} is in the range of $\lambda/8n_{L0} \leq d_{L0} \leq 3\lambda/8n_{L0}$ or $5\lambda/8n_{L0} \leq d_{L0} \leq 7\lambda/8n_{L0}$.

4. A dual-stack optical data storage medium as claimed in claim 1 or 2, wherein a first metal reflective layer, having a thickness $d_{M1} \leq 25$ nm, is present between the write-once L_0 recording layer and the transparent spacer layer and d_{L0} is in the range of $\lambda/8n_{L0} \leq d_{L0} \leq$

$5\lambda/8n_{L0}$.

5. A dual-stack optical data storage medium as claimed in claim 4, wherein a first transparent auxiliary layer I1, having a refractive index $n_{I1} \geq 1.8$ and having a thickness $d_{I1} \leq \lambda/2n_{I1}$, is present between the first metal reflective layer and the transparent spacer layer.

6. A dual-stack optical data storage medium as claimed in claim 5, wherein $d_{I1} \leq \lambda/4n_{I1}$.

7. A dual-stack optical data storage medium as claimed in claim 1 or 2, wherein a second transparent auxiliary layer I2, having a refractive index n_{I2} and having a thickness d_{I2} in the range of $0 < d_{I2} \leq 3\lambda/8n_{I2}$, is present at a side of the write-once L_0 recording layer and d_{L0} is in the range of $\lambda/8n_{L0} \leq d_{L0} \leq 3\lambda/8n_{L0}$ or $5\lambda/8n_{L0} \leq d_{L0} \leq 7\lambda/8n_{L0}$.

8. A dual-stack optical data storage medium as claimed in claim 7, wherein the second transparent auxiliary layer (12) is present at a side of the write-once L_0 recording layer (6) most remote from the entrance face (8) and $n_{I2} \leq n_{L0}/1.572$.

9. A dual-stack optical data storage medium as claimed in claim 7, wherein the second transparent auxiliary layer (12) is present at a side of the write-once L_0 recording layer (6) closest to the entrance face and $n_{I2} \geq n_{L0}/0.636$.

10. A dual-stack optical data storage medium as claimed in any one of the preceding claims, wherein a second metal reflective layer (15) is present at a side of the write-once type L_1 recording layer (3) most remote from the entrance face (8).

11. A dual-stack optical data storage medium as claimed in claim 10, wherein the second metal reflective layer (15) has a thickness $d_{M1} \geq 25$ nm.

12. A dual-stack optical data storage medium as claimed in claim 11, wherein d_{L1} is in the range of $0 < d_{L1} \leq 3\lambda/4n_{L1}$.

13. A dual-stack optical data storage medium as claimed in claim 12, wherein a third transparent auxiliary layer I3 (13), having a refractive index n_{I3} and having a thickness

d_{I3} in the range $0 < d_{I3} \leq \lambda/n_{I3}$, is present adjacent the write-once type L_1 recording layer (3) at a side of the write-once type L_1 recording layer closest to the entrance face (8).

14. A dual-stack optical data storage medium as claimed in claim 11, wherein a third metal reflective layer (17), having a thickness d_{M3} in the range of $0 < d_{M3} \leq 25$ nm, is present at a side of the write-once L_1 recording layer (3) closest to the entrance face (8) and d_{L1} is in the range of $0 < d_{L1} \leq 5\lambda/16n_{L1}$ or $7\lambda/16n_{L1} \leq d_{L1} \leq \lambda/n_{L1}$.

15. A dual-stack optical data storage medium as claimed in claim 12 or 14, wherein a fourth transparent auxiliary layer I4, having a refractive index n_{I4} and having a thickness d_{I4} in the range of $0 < d_{I4} \leq 3\lambda/16n_{I4}$, is present between the write-once L_1 recording layer (3) and the second metal reflective layer (15).

16. A dual-stack optical data storage medium as claimed in claim 13, wherein a fourth transparent auxiliary layer I4, having a refractive index n_{I4} and having a thickness d_{I4} in the range of $0 < d_{I4} \leq 3\lambda/16n_{I4}$, is present between the write-once L_1 recording layer (3) and the second metal reflective layer (15).

17. A dual-stack optical data storage medium as claimed in claim 14 or 15, wherein a fifth transparent auxiliary layer I5, having a refractive index n_{I5} and having a thickness d_{I5} in the range of $0 < d_{I5} \leq 3\lambda/16n_{I5}$, is present adjacent the third metal reflective layer (17) at a side of the third metal reflective layer closest to the entrance face (8).

18. A dual-stack optical data storage medium as claimed in any one claims 5, 6, 7, 8, 9, 13, 15, 16 or 17, wherein at least one of the transparent auxiliary layers comprises a transparent heatsink material selected from the group of materials ITO, HfN and AlON.

19. A dual-stack optical data storage medium as claimed in claim 1 or 2, wherein a guide groove (G) for L_1 is provided in the transparent spacer layer (4).

20. A dual stack optical data storage medium as claimed in claim 1 or 2, wherein a guide groove (G) for L_1 is provided in the substrate (1).